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NOTES AND OBSERVATIONS.

BY WILLIAM TRELEASE.

1. PACHIRA SP.

In the collection of house plants at the Garden occur several trees about ten feet high, raised from seed obtained some sixteen years ago from Haage & Schmidt as *Carolinea alba*. These trees, with glossy palmate leaves, and a trunk conspicuously dilated at base, are quite decorative during the summer and early winter, but lose their foliage toward spring, their new leaves appearing in May. Every few years they flower shortly after the new leaves develop, and their fruit matures almost invariably.

The alternate leaves are dark green and glossy above, paler and dull beneath, digitate, with 3 to mostly 7 elliptical mucronate entire leaflets as much as 8 inches long with narrowly margined extremely short stalks. The common petiole, about as long as the leaflets, is thickened at base, and, like the very thick midribs, at first sparingly stellate pubescent, ultimately becoming glabrous, like the rest of the leaf.

The flowers usually open in pairs, and are solitary on stout slightly scurfy peduncles less than an inch long. Before expansion the buds are narrow and fusiform, recalling somewhat a very stout *Catalpa* capsule. They open at night and are fragrant, but the showy white androecium and greenish corolla fall before the middle of the next morning.

At the top of the pedicel six somewhat sunken elliptical yellow glands secrete nectar freely.

The calyx is cylindrical, about half an inch in diameter and an inch long, slightly and irregularly 5-lobed at top,

very sparingly rusty stellate, green, marked with minute pale dots.

The five petals are oblong, half an inch wide and as much as 7 in. long, whitish green with a shade of chocolate, and microscopically stellate pubescent, the hairs of the outer side being browner than those within, which give a satiny appearance to this side of the petals. On opening, the petals become coiled backwards and expose the pure white stamens as the showy part of the flower.

The androecium is about 6 inches long, with a thick corrugated tube 2 in. long, parted half an inch above the base into ten sets of about eight filaments each, which fork near the middle—each arm ending in a single anther cell. The anthers are oblong, versatile but nearly erect, and deep yellow, like the pollen. The ovary is conical, tomentose, 5-celled, and tapers into the slender white style, which about equals the stamens and is divided at apex into five short linear yellow stigmas.

The ovoid fruit becomes about 2 x 3 inches, and breaks into five valves, each carrying a septum on its middle, and leaving as many rows of about five seeds each attached to an axile 5-winged columella. This, like the inside of the valves, is densely white tomentose, while the seeds are glabrous, brown, with a series of somewhat anastomosing elevated white bands radiating from the hilum and meeting over the apex of the seed.

Martius, in volume i. of the *Flora Brasiliensis*, gives descriptions of the species of *Pachira* or *Carolinea* recognized as occurring in Brazil. In his *General History of the Dichlamydeous Plants*, Don characterizes all of the species recognized in 1831; and Spach, in *Hist. Nat. des Végétaux*, iii. 423, also treats of the genus in 1834, since which time no general account appears to have been written, though a number of plates have been published. The descriptions as a rule are incomplete in one or other important respect, so that it is impossible to name a specimen by them with certainty; but the number, apex, and degree of

pubescence of the leaflets, the degree of persistence of the leaves, the form of the calyx and the presence or absence of glands at its base, the color of the petals and stamens, the number of groups of filaments and the form of the anthers, and the presence or absence of hairs at the base of the style and on the seeds, all appear to afford characters by which species may be recognized, when they shall have been brought together. Unfortunately, herbarium material is rare and as a rule poor, few comparative field studies have been made, and no complete collections occur in conservatories, so far as I can learn. Some difference of opinion also exists as to the limitation of this and related genera.

If the characters given by Don are reliable, our plant is pretty certainly excluded from all of the species described by him, excepting *P. affinis*, the leaves of which are unknown (hence presumably absent at the time of flowering), while the peduncle appears to be longer than in our plant, and the petals erect, — neither of which characters need of necessity exclude our plant; but several important points are not mentioned in the description, so that I should hesitate either to call it *affinis* or to venture on a new name for it.

The five species which have been most cultivated may be separated by the following key, the names employed being those of the Index Kewensis, i. 442, though a strict investigation of the synonymy will suggest the propriety of certain changes.

- * Stamen tube divided into five clusters: petals white or greenish.
 Calyx very brown pubescent: glands present: stamens white: style white (or reddish?).....*P. alba*.
 Less rusty: no glands: style red.
 Stamens creamy white.....*P. stenopetala*.
 Stamens green below, red above.....*P. minor*.
- ** Stamen tube divided into ten clusters.
 Corolla and style red: no glands: stamens white, or yellow at base.....*P. insignis*.
 Corolla green and white: glands present: stamens and style white.....*P. sp.* (plate 27).

*** Stamen tube divided into about fifteen clusters.

Corolla green and white: glands present: stamens and style yellow or white below, red above.....*P. aquatica*.

Explanation of plate 27. Fig. 1, flowering branch of *Pachira* species, half size; fig. 2, calyx, natural size; fig. 3, one cluster of stamens, natural size; fig. 4, anther, enlarged; fig. 5, seed, natural size.

2. CRASSULA QUADRIFIDA BAKER.*

This pretty, partly shrubby species, which, as Mr. Baker has pointed out, is quite exceptional in the genus *Crassula* by its constantly tetramerous flowers, has this year developed in the greenhouse a proliferous habit, forming numerous small rosettes of leaves in the otherwise normal inflorescence. The leaves of these clusters, except for their smaller size, are similar to those of the stem, and quite like those which are frequently clustered in the lower axils. Like the stem leaves they are conspicuously pitted.

The appearance of such a proliferous plant, and the details of its inflorescence, are well shown in plate 28 and the accompanying engraving.



* Baker, *Refugium Botanicum* (1873), pl. 298; Nicholson, *Dictionary*, Div. 2, 392.